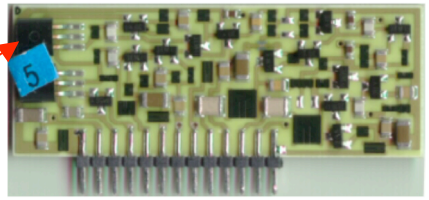
Electronics for FNAL mini-TPC

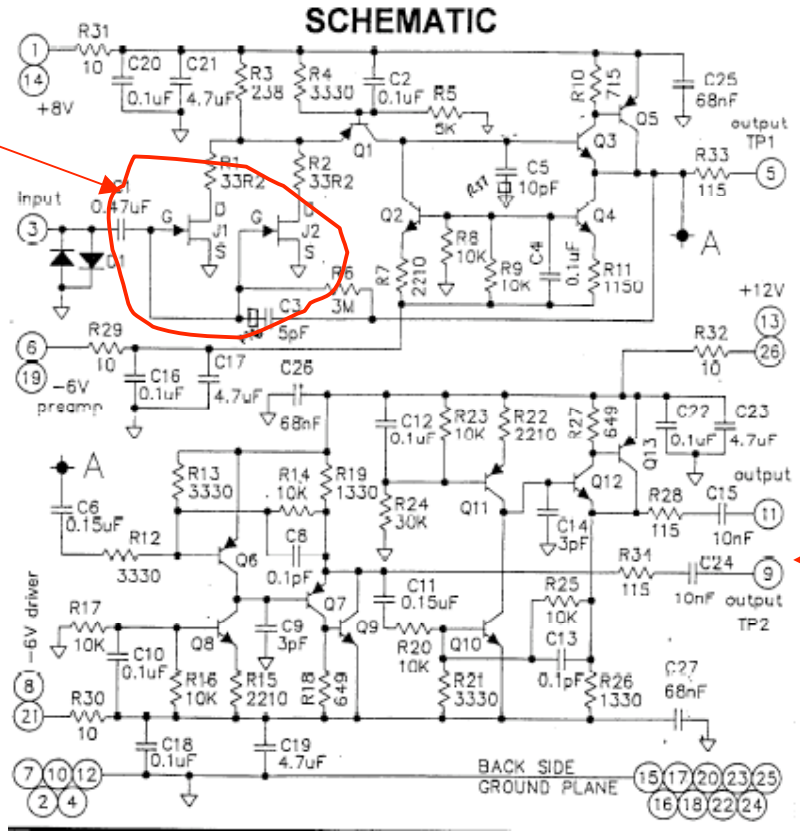
Dan Edmunds work
reported by Carl Bromberg

Hybrid preamplifier

D-zero Run-II



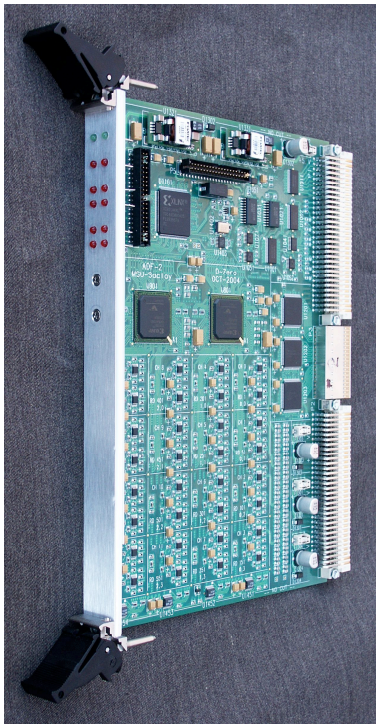
Dual FET
input stage



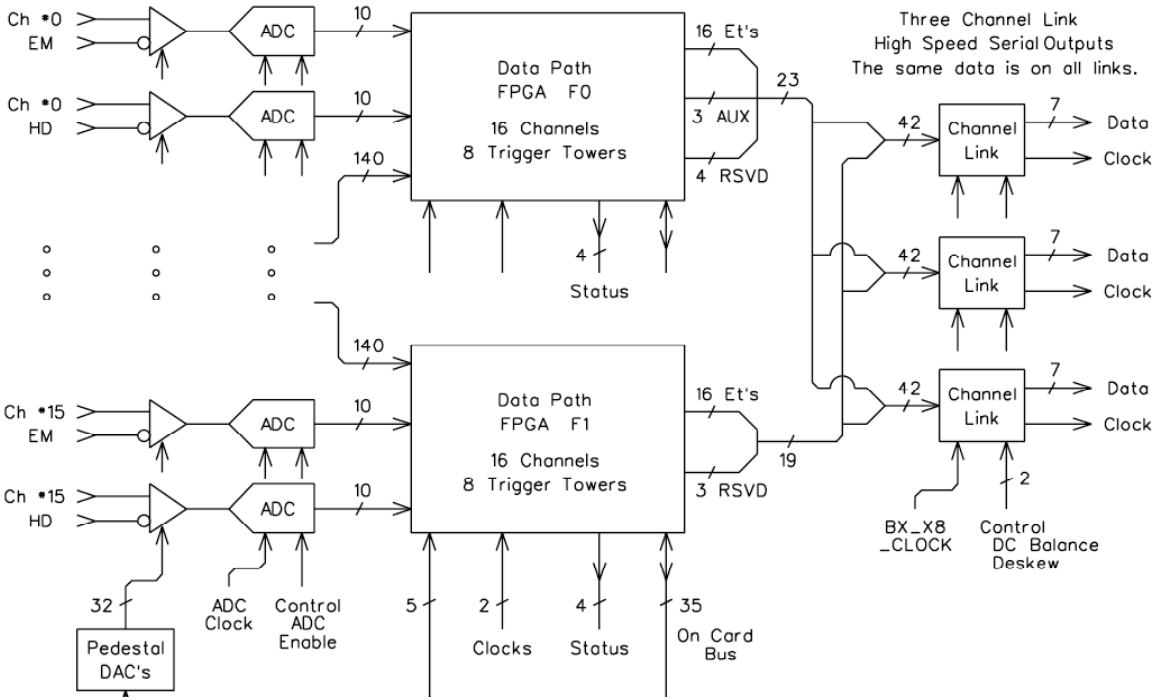
Output

Analog to digital conversion

D-zero Run-II
ADF-2 card

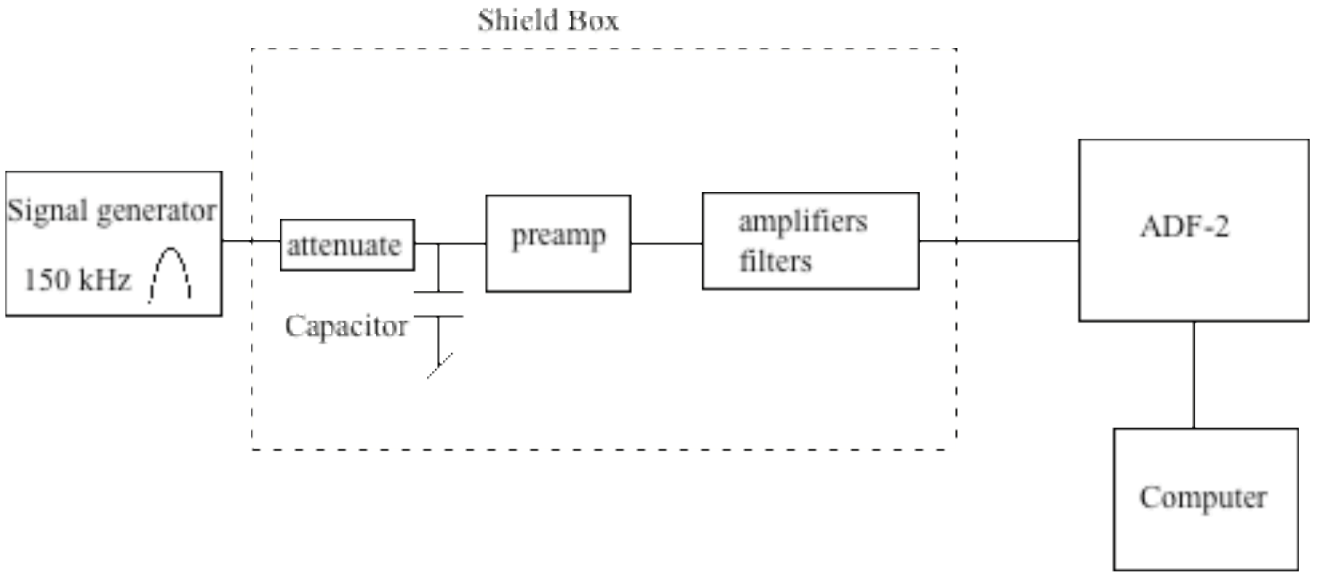


FPGA data storage
field programmable



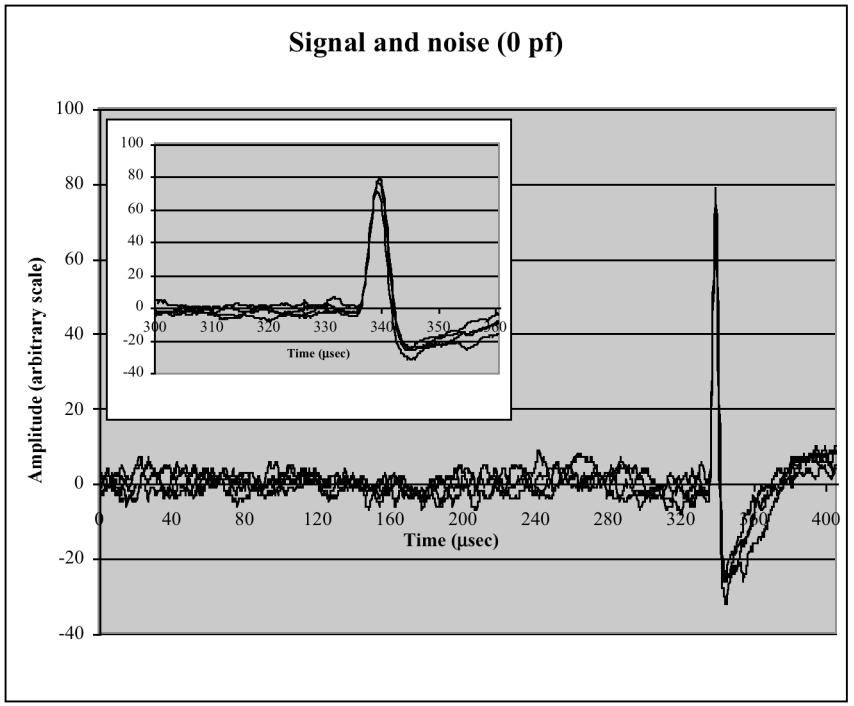
Example: 2048
samples @ 197 ns

Test setup

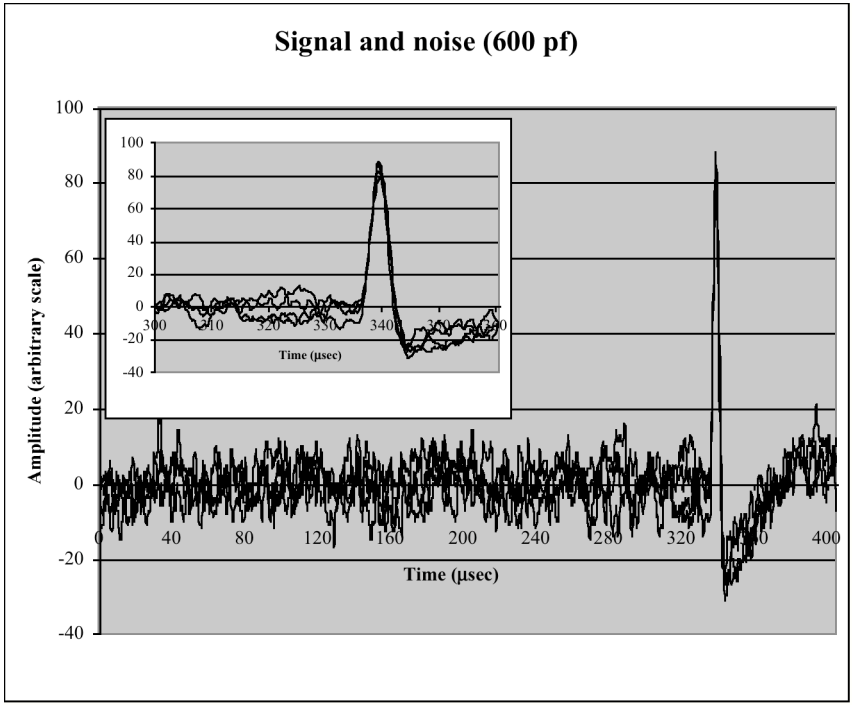

Shield Box
Signal generator
150 kHz
attenuate
Capacitor
preamp
amplifiers
filters
ADF-2
Computer

22,000 electron signal

Capacitance 0-pf

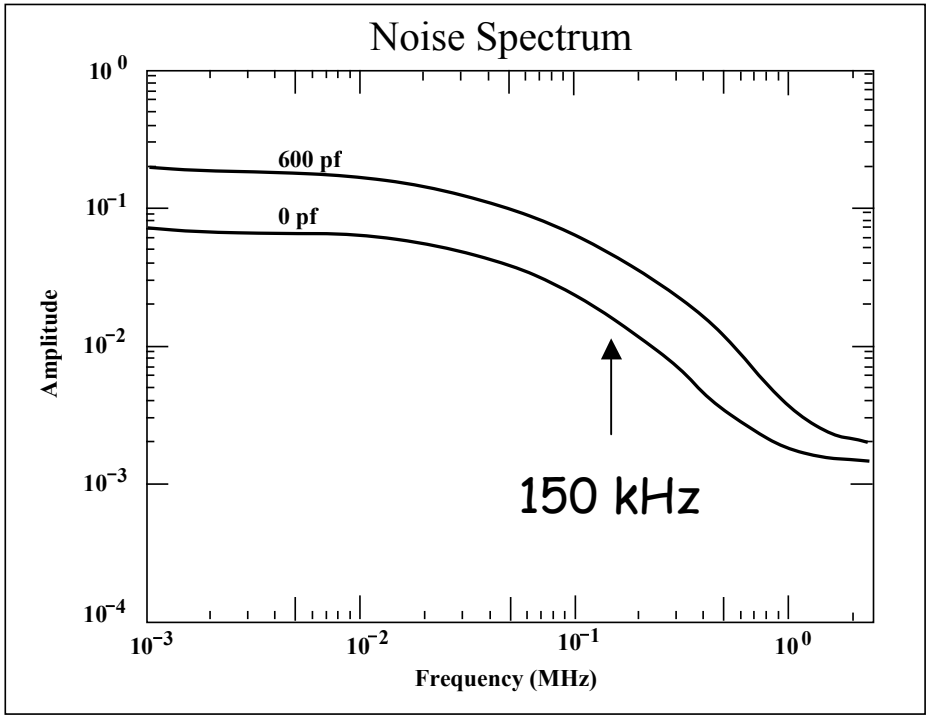


Capacitance 600-pf



Noise spectrum

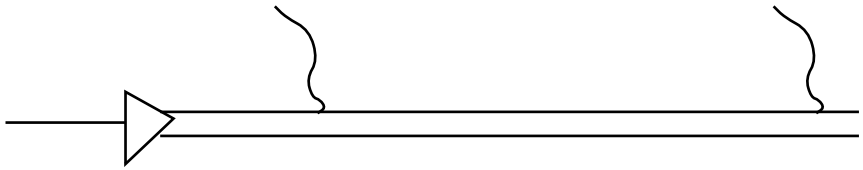
High pass & low pass filtered



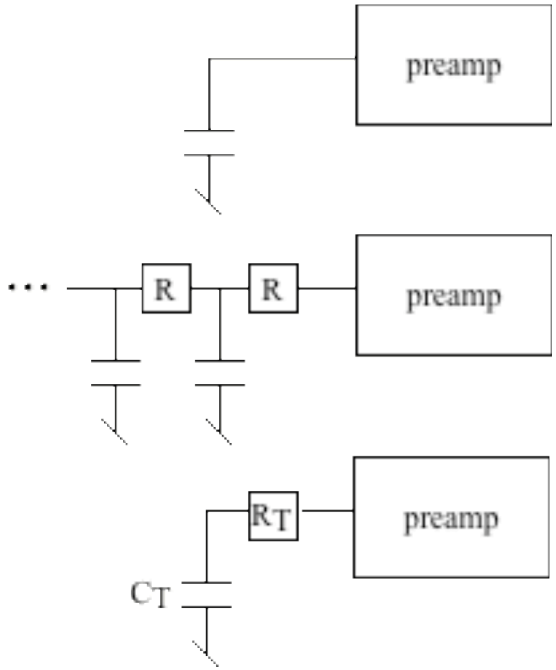
Wire signals

No cross talk on neighboring wires.

SS Wire resistance ~100 Ohms/m
Capacitance ~ 6 pf/m
Dispersion of signal from far end.



Johnson Noise



Good

Not so good

Even worse

ICARUS

SS wires. Why?

CuBe wires ~5 Ohms/m